Base Year: 1999 By: A. K. Fanai

SOURCE INVENTORY

CATEGORY # 754

PAVED ROADS - VEHICLE TRAVEL

1999 EMISSIONS

Introduction

Fugitive dust particles raised from the movements of motor vehicles on paved road surfaces are included in this category.

Methodology

The methodology for estimating particulate emissions from vehicular travel on paved roads was updated in the Fifth Edition of U.S.EPA's Compilation of Air Pollutant Emission Factors AP42 document (January 1995). Emission rates are a function of vehicle weight and silt loading as shown in the following equation:

$$E = k\,(sL/2)^{0.65}\,(W/3)^{1.5}$$

where: E is the particulate emission factors in pounds per vehicle miles traveled (VMT)
k is the particle size multiplier used to compute PM_{10} and $PM_{2.5}$
sL is the roadway silt loading in grams per mile
W is the average vehicle weight in tons.

California specific silt loading for different road types were measured in a study carried out by Midwest Research Institute (MRI) in 1995. Roads were divided into four classes:

freeway/expressway
major street/highway
collector street
local street.

Estimated fraction of county VMT in each of the four roadway types were taken from 1993 data by Highway Performance Monitoring Systems (HPMS). The 2000 fractions are assumed to be the same. County specific 2000 VMT data were taken from estimates from California Air Resources Board EMFAC2000 model.

Average vehicle weight was assumed to be 2.4 tons, based on vehicle counts performed during the MRI study.

It was assumed that wet days (with precipitation over 0.01") prevent these emissions from occurring. Data on the average number of "wet" days in the Bay Area each month were obtained from analysis of the Golden Gate Weather Services rainfall information. For each county, data from a number of weather stations are available. Data from weather stations close to on-road vehicular activity were chosen to develop the monthly profile.

The monthly fraction of annual VMT came from monthly Caltrans VMT highway data prepared for the Sacramento Office of the Federal Highway Administration. These were combined with the number of wet days in the relevant month to develop a monthly profile.

TRENDS

VMT data was supplied by ARB for year 1995, 2000-2006. The growth rates were based on MTC's projection of Bay Area travel Growth.